REMARKS AND ARGUMENTS

The present application includes claims 1, 3-8, 10-15 and 17-20. Claims 1, 3-8, 10-15 and 17-20 were rejected in the August 11, 2004 Office Action. Claims 1, 7 and 14 are amended. Claims 2, 9 and 16 have been canceled.

Claim 1 is amended to recite applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data. Claim 1 is also amended to recite storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation.

Claims 7 and 14 are amended to recite applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data. Claims 7 and 14 are also amended to recite transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation.

Claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17, and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable in view of Huang, *PACS: Basic Principles and Applications*.

Claims 4, 6, 11, 13, 18 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang in view of Takeo et al. (U.S. Patent No. 6,231,246).

Rejections under 35 U.S.C. § 103(a)

The Applicant next turns to the rejection of claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17, and 19 under 35 U.S.C. § 103(a) as being unpatentable in view of Huang. Huang discloses an image acquisition gateway computer that acquires images from different imaging modalities (Huang, section 8.1, page 199, lines 1-3). Once the raw image data is received at the acquisition computer, a sequential progression of functions are applied to the raw image data to **completely and fully** preprocess the raw image data (Huang, section 8.8.1, pages 224-225). That is, after the raw image data leaves the acquisition computer, the image data has been fully preprocessed.

The display workstations of Huang do not perform any additional preprocessing of the image data. The only function performed by the display workstations is the processing of the image data, which is **differentiated** from the preprocessing of the image data by Huang: "**Image preprocessing functions are different from preprocessing functions** (*see* section 8.7) in the sense that preprocessing does not alter the appearance of the image, whereas processing will." (Huang, section 12.3.1, page 320) (emphasis added).

That is, the display workstations of Huang do not have the ability to apply preprocessing functions to image data that has been partially preprocessed by the acquisition computer. Huang merely describes the **full and complete** preprocessing of raw image data at an acquisition computer to create **fully preprocessed** image data. The fully preprocessed image data of Huang

may be retrieved by a display workstation, but the display workstation of Huang is incapable of applying preprocessing functions to the fully preprocessed image data. The display workstation is merely able to process (but not preprocess, as described above) the fully preprocessed image data.

Huang therefore describes a PACS system where **all initial preprocessing decisions are imposed on all subsequent viewers** of the image data. The complete and full preprocessing of image data at the acquisition computer completely prevents any subsequent viewer of image data from customizing the preprocessing of image data to suit his or her needs. That is, a subsequent viewer is "stuck" with the preprocessing functions applied to image data at the acquisition computer. The subsequent viewer in Huang is incapable of directing the display workstation to apply any preprocessing function to customize the presentation of the image data for the viewer.

As such, Huang does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claim 1.

Huang also does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the

preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claims 7 and 14.

The Examiner cites to section 8.8.2, pages 225-226 for the proposition that Huang discloses "at least one of the preprocessing functions is applied to the partially preprocessed raw image data at a display workstation". (Aug. 11, 2004 Office Action, pages 2-3.) However, Huang clearly does not disclose this, but instead discloses the application of preprocessing functions to raw image data at the acquisition workstation or gateway computer: "These seven processes are independent programs running in the background **at the gateway computer**." (Huang, section 8.8.2, page 226) (emphasis added). Moreover, the Examiner admits that Huang does not disclose applying preprocessing functions to image data at a display workstation by stating that Huang "does not appear to expressly state any preprocessing functions applied at a display workstation." (Aug. 11, 2004 Office Action, page 3.)

The Examiner cites to section 8.6 of Huang for the proposition that "a PACS module can function alone as an individual unit, thereby the image acquisition workstation and the display workstation are the same." (Aug. 11, 2004 Office Action, page 3.) Huang does not disclose that the distinct components of the acquisition workstation and the display workstation being the same unit in an individual PACS module. Conversely, Huang merely discloses that a PACS module, standing alone, comprises "connections to some imaging devices, a short-term archive, a database, some display workstations, and a communication network linking these components together." (Huang, section 8.6, page 216.) Huang clearly does not disclose that a PACS module can comprise an acquisition gateway **and** a display workstation. As the above passage from

Huang clearly states, the PACS module can comprise "some display workstations", but does not state that the PACS module can comprise an acquisition gateway. Moreover, Figure 8.12 of Huang clearly illustrates that the acquisition gateway computer disclosed in Huang is **physically distinct** from the PACS module.[1] Therefore, Huang clearly and unequivocally discloses that the acquisition gateway and a display workstation are physically distinct and separate components and may not function as the same unit in a PACS module. The Examiner has also asserted that "it would have been obvious to one of ordinary skill in the art to have modified the applying of preprocessing functions applied to a partially preprocessed raw image data disclosed by Huang to include being performed at a display workstation." (Aug. 11, 2004 Office Action, page 3; *see also* page 6.) However, the Examiner has also admitted that Huang "does not appear to expressly state any preprocessing functions applied at a display workstation." (Aug. 11, 2004 Office Action, page 3.) Therefore, the Examiner has admitted that a claim element is not taught by the prior art, but has proceeded to find the claim element obvious nonetheless. Because of the manner in which the statements are worded, the Applicant is unsure if these statements are intended to constitute Official Notice on the part of the Examiner.

If the Examiner is taking Official Notice, for example, of facts in the Examiner's personal knowledge rather than the prior art, the Applicant respectfully traverses each of the Examiner's assertions. Under MPEP § 2144.03, the Examiner is now obligated to cite references in support of the Examiner's assertions. Alternatively, if the Examiner's assertions are based on facts

[1] Please note that the "DICOM US PACS Gateway" of Figure 8.12 is not an acquisition computer, but is instead a "general connection of the US PACS module to a PACS acquisition gateway computer . . . ." (Huang, Figure 8.12, page 218.)

within the personal knowledge of the Examiner, the facts must be supported by an affidavit from the Examiner.

The Examiner's assertion is not well known in the art as evidenced by the cited prior art. If the Examiner's assertion were well known, it would appear in the prior art. However, even after the Examiner's exhaustive search, the Examiner has been unable to find any reference teaching the Examiner's assertion. Consequently, it is respectfully submitted that the Examiner's assertion is **not** commonly known in the art and the Examiner's finding of Official Notice is respectfully traversed.

Thus, the Applicant respectfully submits that Huang does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claim 1.

Huang also does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claims 7 and 14.

Huang also fails to disclose a PACS network that includes a preprocessing database and an image database, where the preprocessing database is utilized for storing the partially preprocessed raw image data and the image database is utilized for storing fully preprocessed image data, as recited in claim 1. There is no disclosure in Huang discussing two databases for the storage of partially preprocessed image data and fully preprocessed image data separately. The Examiner has asserted that "[i]t would be inherent to include a preprocessing database and an image database, the preprocessing database utilized for storing the partially preprocessed raw image data, the image database utilized for storing a fully preprocessed image data." (Aug. 11, 2004 Office Action, pages 6-7.) Thus, the Examiner is asserting that a claim element missing from a cited reference is inherently present in the disclosure of the cited reference. According to MPEP § 2112(IV):

> The fact that a certain result or characteristic **may** occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.
> . . .
> "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is **necessarily present** in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient."

MPEP § 2112(IV) (citations omitted) (emphasis added).

In order for the Examiner to "rely[] upon the theory of inherency, **the examiner must provide a basis in fact and/or technical reasoning** to reasonably support the determination that the allegedly inherent characteristic **necessarily** flows from the teachings of the applied prior art." MPEP § 2112(IV) (citing *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (B.P.A.I. 1990)

(emphasis added)). In support of the Examiner's inherency argument, the Examiner relies on the statement "Huang discloses databases (Sect. 7.1.2-7.1.3; Sect. 8.1; Sect. 8.3.1)." (Aug. 11, 2004 Office Action, page 6.) This statement alone is insufficient to constitute "a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic **necessarily** flows from the teachings of the applied prior art." (MPEP § 2112(IV)) (emphasis in original).

Moreover, Examiner's citation to three sections of Huang similarly fails to provide any "basis in fact and/or technical reasoning" for the inherency argument. First, section 7.1.2 merely discloses a singular PACS database server with an enumerated list of functions. (Huang, section 7.1.2, pages 178-179.) Huang merely discloses a singular PACS database server and does not include any disclosure of multiple databases, such as a preprocessing database and an image database, as recited in claim 1.

In addition, Huang clearly enumerates the limited functions performed by the singular PACS database server. The list of functions consists of:

1. Radiology registration;
2. PACS (RIS) Technologists;
3. Acquisition computers;
4. Case management;
5. Study interpretation;
6. Report transcription;
7. Radiology administrative; and
8. Research.

(Huang, figure 7.2, page 179.) Nowhere in this list is disclosed any storage of partially preprocessed raw image data or fully preprocessed image data, as recited in claim 1. As such, section 7.1.2 cannot possibly provide any "basis in fact and/or technical reasoning" for the Examiner's assertion of inherency.

Next, the Examiner's citation to section 7.1.3 of Huang also fails to provide any support for similar reasons. Section 7.1.3 of Huang discloses a database included in a display workstation. Huang again clearly itemizes the operations of the workstation database. These operations are limited to:

1. Case preparation - accumulation of all relevant images and information belonging to a patient examination;
2. Case selection - selection of cases for a given subpopulation;
3. Image arrangement - tools for arranging and grouping images for easy review;
4. Interpretation - measurement tools for facilitating the diagnosis;
5. Documentation - tools for image annotation, text, and voice reports; and
6. Case presentation - tools for a comprehensive case presentation.

(Huang, table 7.2, page 180.) Nowhere in this list is disclosed any storage of partially preprocessed raw image data or fully preprocessed image data. Therefore, section 7.1.3 of Huang merely discloses a singular database and does not disclose any storage of partially or fully preprocessed image data in the database. Huang therefore does not teach or suggest a PACS network with a preprocessing database and an image database, where the preprocessing database

is utilized for storing the partially preprocessed raw image data and the image database is utilized for storing fully preprocessed image data, as recited in claim 1. As such, section 7.1.3 cannot possibly provide any "basis in fact and/or technical reasoning" for the Examiner's inherency argument.

Next, the Examiner's citation to sections 8.1 and 8.3.1 also fails to provide support for the Examiner's inherency argument. Section 8.1 merely describes a "PACS controller (server) to archive" images from different imaging modalities. (Huang, section 8.1, page 199.) Section 8.3.1 merely describes "an image archiving system" for receiving a formatted image (where a formatted image is an acquired image that is organized based on a standard format, such as DICOM, by a formatting program)." (Huang, section 8.3.1, page 207.) The two sections cited by the Examiner merely describe singular storage media for the storage of images. However, these sections do not provide any basis in fact or technical reasoning to support the Examiner's argument that separate databases for the storage of partially and fully preprocessed image data are inherent in singular archive systems. For example, as Huang does not disclose the partial preprocessing of image data, (*see* remarks above and Huang, section 8.8.1, pages 224-225), Huang does not provide any basis for separate databases for the storage of partially and fully preprocessed image data. In other words, as Huang does not teach partially preprocessed data, Huang has no teaching of a separate database for storing partially preprocessed image data. These sections of Huang therefore do not provide any basis or reasoning for the Examiner's inherency argument.

As none of the sections of Huang cited by Examiner provide any "basis in fact and/or technical reasoning" for the Examiner's inherency argument, the Applicant respectfully traverses the Examiner's argument. The Applicant respectfully requests that the Examiner provide evidence to support her inherency argument.

In addition, to the extent that the Examiner may support the above assertion with Official Notice, the Applicant respectfully requests substantiation of such Official Notice.

The present rejection encompasses claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17, and 19. The Applicant respectfully submits that Huang does not teach or suggest elements of at least claims 1, 7 and 14. Claims 3, 5, 8, 10, 12, 15, 17, and 19 depend from claims 1, 7 and 14. Therefore, the Applicant respectfully submits that claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17, and 19 should be allowable.

The Applicant next turns to the rejection of claims 4, 6, 11, 13, 18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Huang in view of Takeo. Takeo describes a method and apparatus for reproducing an image via two image reproducing devices wherein gradation and/or sharpness correction is performed for both images reproducing devices. Specifically, Takeo describes a method and apparatus that receives an image signal, applies a first processing condition to the image signal for display on a computer screen, applies a second processing condition to the image signal for printing the image on film, stores these two processing conditions, displays the image on the computer screen and prints the image on film (col. 5, lines 64-68; col. 6, lines 1-31).

The processing conditions applied in Takeo fully and completely process the image data for the display and printing of the image data (col. 6, lines 37-45.) The image processing means of Takeo is the only disclosed component of the Takeo apparatus that performs any processing of image data. Takeo does not teach or suggest any additional image processing or preprocessing by any component other than the image processing means. Takeo merely describes a single component that processes image data **once** for each output device (col. 6, lines 37-45.)

As such, Takeo does not remedy the shortcomings of Huang, as described above. Specifically, Takeo does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claim 1.

Takeo also does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claims 7 and 14.

Moreover, assuming for the sake of argument that one would be motivated to combine Huang and Takeo, the combination would similarly fail to teach or suggest elements of at least

claims 1, 7 and 14. As stated above, neither Huang nor Takeo teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claim 1. Similarly, as stated above, neither Huang nor Takeo teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claims 7 and 14.

Therefore, as elements of at least claims 1, 7 and 14 are not taught or suggested by Huang and Takeo, alone or in combination, the Applicant respectfully submits that a combination of Huang and Takeo fails to teach or suggest elements of at least claims 1, 7 and 14.

The present rejection encompasses claims 4, 6, 11, 13, 18 and 20. The Applicant respectfully submits that neither Huang nor Takeo, alone or in combination, teach or suggest elements of claims 1, 7 and 14. Claims 4, 6, 11, 13, 18 and 20 depend from claims 1, 7 and 14. Therefore, the Applicant respectfully submits that claims 4, 6, 11, 13, 18 and 20 should be allowable.

Therefore, the Applicant respectfully submits that the claims of the present application should be allowable over the prior art.

CONCLUSION

If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GTC, Account No. 50-2401.

Respectfully submitted,

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Christopher R. Carroll
Registration No. 52,700

McAndrews, Held & Malloy, Ltd.
500 West Madison Street, 34th Floor
Chicago, IL 60661

Telephone: (312) 775-8000
Facsimile: (312) 775-8100